

# ATOMIC ENERGY *newsletter*®

A SERVICE FOR INDUSTRY BUSINESS ENGINEERING AND RESEARCH  
ROBERT M. SHERMAN, EDITOR. PUBLISHED BI-WEEKLY BY ATOMIC ENERGY NEWS CO., 1000 SIXTH AVENUE, NEW YORK 18, N. Y.

Dear Sir:

January 10th, 1956  
Vol. 14... No. 11

Deliveries on a contract to supply U.S. Navy with neutron dosimeters are being completed by Landsverk Electrometer Co., Glendale, Calif. The Navy will use the instruments for personnel protection in the vicinity of nuclear reactors. Landsverk supplies this instrument commercially, which is equally sensitive to gamma rays and neutrons, as its model L-29, (its military nomenclature is Radiacmeter IM-112/PD.) ..... In a contract recently awarded the Ralph M. Parsons Co., Los Angeles, by the Navy, the problems connected with ground maintenance and handling of a nuclear propelled aircraft will be investigated. Parsons will evaluate the problems involved, and recommend on the kind of site and equipment needed for such an aircraft. (Other PRODUCT NEWS, p. 4 this LETTER.)

In about five years the extent of atomic energy applications to products and processes in industry in the U.S. may make necessary new capital equipment expenditures centered on such applications, T. S. Hodgins, director of the U. S. Business and Defense Services Administration chemical and rubber division, recently told the chemical marketing division of the American Chemical Society's New York section. Hodgins predicted the new operational techniques utilizing atomic energy applications would be of especial concern to the chemical industry. (Other BUSINESS NEWS, p. 2 this LETTER.)

Heavy water will be used as a moderator for nuclear reactors in India, the Prime Minister recently told the Indian Parliament. It is now planned to begin construction of the heavy water (and fertilizer production) plant at Nangal in 1957; estimated cost of the project has been set at Rs.250,000,000. When the plant is in production (target date is 1960), it will produce oxygen as well as heavy water and fertilizer. (Other INTERNATIONAL NEWS, p. 5 this LETTER.)

A contract for the sale of uranium concentrates to American Smelting and Refining Co., has been signed between that company and Cherokee Uranium Mining Corp., Denver. Under the contract, Cherokee will supply AS & R up to 300 tons of concentrates per month, and because Cherokee will ship exclusively to AS & R, reductions in smelting costs from the standard \$10 per ton of concentrates, to \$8.50 per ton will be made. Other advantages of this exclusive contract will save Cherokee from \$3 to \$4 per ton in smelting costs, officials estimate. (Other RAW MATERIAL NEWS, p. 5 this LETTER.)

Second annual meeting of the American Nuclear Society is now planned for June 6-8, 1956, in Chicago. The Society, which has obtained over 1,000 members since its establishment in January, 1955, has its membership open to physicists, chemists, mathematicians, biologists, engineers, and physicians engaged in professional activity in the fields of nuclear science or engineering. Society headquarters are at Oak Ridge, Tenn., where the executive secretary may be addressed at P.O. Box 963..... Applications for the 50-week training program in nuclear reactor engineering of the Oak Ridge School of Reactor Technology are now being accepted by the school; deadline is Mar. 12, 1956. Information from: P. O. Box P, Oak Ridge, Tenn.

### ATOMIC ENERGY FINANCIAL NEWS...

SHARP DECLINE IN URANIUM FILINGS:- The rise and fall of speculative interest in U.S. "penny" uranium stock issues was pointed up by figures on such filings given last fortnight by J. Sinclair Armstrong, chairman, Securities & Exchange Commission, while he was in New York. For the fiscal year to June 30, 1954, there were 78 uranium issues in the (Regulation A) "under \$300,000" class, for a total of \$18 million, filed with the SEC. In the 1955 fiscal year, there were 436, worth \$96 million. In the second half of 1955, some 206 issues were filed, worth \$48 million, but the trend has been sharply downward: July, \$11.6 million; August, \$14.5 million; September, \$9.2 million; October, \$4.5 million; November \$5.1 million; and December, \$3 million. This decrease in new issues, coupled with lethargy in the Denver and Salt Lake City exchanges in uranium stocks in general, indicates the small degree of public interest in low priced uranium shares now prevalent in the U. S.

EXPANSION BY BRITISH FIRMS:- An increase in capital by Gamma & X-rays, Ltd., London, England has now been put into effect. The firm's capital has been increased by £3,000 in £1 preference shares, beyond the registered capital of £3,000..... Approval has been given by the local town council to an application by Nuclear Enterprises, Ltd., of Winnipeg, Canada, to lease a site in Edinburgh, Scotland, for construction of a manufacturing plant. The firm produces scintillation detection devices as well as plastic and liquid phosphors used in nuclear instruments.

NEW PROPERTIES ACQUIRED BY URANIUM MINING FIRM THROUGH STOCK PURCHASE:- The recent purchase by Mountain Mesa Uranium Corp. of all outstanding shares of Cal-Uranium has now given Mountain Mesa a uranium ore body ranking among the five largest on the Colorado Plateau, and which geologists estimate may hold 615,000 tons of ore with a value of approximately \$18 million. Mountain Mesa also has producing properties in Wyoming as well as other Colorado Plateau holdings.

### ATOMIC ENERGY BUSINESS NEWS...

PROPOSALS FOR COMMERCIAL CHEMICAL PROCESSING PLANTS TO BE CONSIDERED:- A new program has been set up by the USAEC to encourage private construction and operation of plants for the chemical processing of irradiated fuel elements from research and power reactors. Under it, the USAEC will now assist interested firms by making available to them Commission technology and by turning over to them irradiated fuel elements from Commission plants. Objective is to have commercial processing plants in operation as it becomes necessary to process fuel elements from privately-owned nuclear power reactors. (Chemical processing plants are an important part of the fuel cycle of nuclear reactors. They recover for re-use the fissionable and fertile materials present in the irradiated fuel elements, and place the radioactive fission products in disposable or useable forms. So far, these operations are being performed only by Government-owned plants at various USAEC sites.)

WORK ON NUCLEAR PROPELLED AIRCRAFT SHIFTED:- Lockheed Aircraft Corp. plans to transfer its preliminary design work on a nuclear powered aircraft to its plant at Marietta, Ga., from Burbank, Calif., where it is now concentrated. F. A. Cleveland, who heads the project at Burbank, will move to Georgia. Both Marietta and Burbank had been working on the project, with the major portion being done at Burbank. The move will not affect other nuclear projects under way at Burbank, or at Lockheed's missiles systems division in Van Nuys, Calif. D. J. Haughton, a Lockheed vice-president and general manager of the Marietta division, is seeking corporate approval for an \$8.5 million expenditure in 1956 at Marietta on buildings and equipment. Included would be new engineering facilities for the nuclear aircraft propulsion project. Lockheed recently bought 140 acres of land adjoining Dobbins Air Force Base, where the Marietta division is located.

ADDITIONAL TIME GIVEN PUBLIC POWER ORGANIZATIONS FOR PROPOSAL SUBMISSIONS:- The three public power organizations which had shown interest in purchasing the electricity generated at the experimental West Milton, N.Y., nuclear reactor have now been given an additional month to submit a firm proposal to purchase the power. These utilities: Municipal Electric Assoc. of Mass.; Board of Light Commissioners, Ilion, N.Y.; and N. Y. State Rural Electric Cooperative Assoc., had originally had difficulty in securing transmission lines, from their systems to W. Milton. The electricity is surplus, generated incidental to experimental work on a submarine nuclear power plant.

INDUSTRIAL APPLICATIONS OF ATOMIC POWER: Condensation of remarks by W. Kenneth Davis, Dir., Div. of Reactor Dev., USAEC, before meeting of American Assoc. for Advancement of Science, Atlanta, Ga., Dec. 29, 1955.

The technology of nuclear reactors has advanced tremendously since the first controlled chain reaction was achieved just 13 years ago by Enrico Fermi and his associates.

Now, under USAEC programs, nuclear reactors for heat production, and other applications, are being studied in the U.S. Much of the emphasis is on the development of reactors for propulsion or power generation. The inherent characteristics of reactors, such as high heat content per unit weight of fuels, production of heat without need of oxygen, and infrequent refueling, all make reactors particularly suitable for military applications such as ship or aircraft propulsion, or as sources of power for remote bases. About 70% of the USAEC's reactor program is still concerned with these applications.

However, the USAEC is increasingly devoting attention to industrial uses of nuclear reactors. Reactors for electric power generation appear to be the one application most promising for relatively early and widespread use, and their development comprises the major part of the USAEC's industrial program at this time.

This power reactor development program is in three main parts: (1) Development of basic technology, (2) Testing of concepts by integrated reactor experiments, and (3) The power reactor program in cooperation with U. S. industry.

In the basic technology program, a large portion is concerned with engineering development in shielding, reactor control methods, chemical processing, waste disposal, metallurgy and materials, heat transfer, and fluid mechanics. Effort is also devoted to design and manufacture of pumps, valves, instruments, control mechanisms, pressure vessels, and the myriad other reactor components.

The reactor experiments are, of course, the step in the evolution of a reactor from a concept to a commercial plant. They may be called the "pilot plant" stage that is common in industrial development practice. Major reactor experiments which have been completed, or are now in progress, include: Experimental breeder reactors 1 & 2, at the national reactor testing station, Idaho Falls, Idaho, handled by Argonne National Laboratory, Lemont, Ill.; borax III, at Idaho Falls, handled by Argonne; homogeneous reactor experiments 1 & 2, at Oak Ridge National Laboratory, Oak Ridge, Tenn.; experimental boiling water reactor, at Argonne National Laboratory, handled by Argonne; and the sodium reactor experiment, at Santa Susanna, Calif., handled by Atomics International div. of North American Aviation, Inc.

The most recent of promising reactor concepts (not mentioned above) on which work has begun involves the use of molten plutonium alloy. Very high temperatures would be possible with this system, and a fast breeder reactor using such a fuel is potentially feasible. Many problems remain to be solved before this reactor concept becomes a reality, and the date for the beginning of the experiment has been tentatively set at early in 1959. Preliminary work is now being done at Los Alamos Scientific Laboratory.

Under the power reactor program, the USAEC encourages the construction of prototype power reactors which would be financed primarily by private funds, although the USAEC will underwrite a part of the cost of research and development associated with such a project.

Four nuclear power plants, to be erected under this USAEC cooperative program, and two plants (Consolidated Edison Co., New York, and Pennsylvania Light & Power Co.) entirely privately financed, were proposed, with some now in the construction stage, and others still on the drawing boards.

The four plants include a sodium cooled, graphite moderated reactor, proposed by Consumers Public Power District of Nebraska, of 75,000 KW of electrical capacity, with Atomics International as contractor; a fast breeder reactor, proposed by Power Reactor Development Co., of 100,000 KW capacity, with Detroit Edison Co. generating and selling the electricity; a pressurized water reactor, proposed by Yankee Atomic Electric Co., of 154,000 KW capacity, for New England; and a modified boiling water reactor, proposed by the Nuclear Power Group, of 180,000 KW capacity, with General Electric Co. as prime contractor, to be located on the system of the Commonwealth Edison Co.



### PRODUCT, PROCESS & INSTRUMENT NEWS...

NEW PRODUCTS FROM MANUFACTURERS:- New fume control cabinet, trade-named Cygnamatic, is designed for the storage of small quantities of radioisotopes for laboratory use. Cabinet interior is lined with lead foil faced with 1/8-in. rigid vinyl sheet, and is equipped with three vent grills which carry fumes and particles to a scrubbing unit at the back of the cabinet. Ducting, scrubber unit, and fan are constructed from rigid vinyl sheet to eliminate corrosion problems and minimize contamination. --Turner & Brown Ltd., Bolton, Lancashire (England).

New Van de Graaff particle accelerator, with power output rating of 3,000 watts of radiation at 3-million electron volts, is said by the manufacturer to be the most powerful and versatile machine radiation source now commercially available. The machine will produce a radiation field several hundred times more intense than the most powerful radioactive cobalt source now in industrial use (although it does not possess the penetrating ability of radiocobalt). Designed to produce nearly all the fundamental radiations, such as electrons, X-rays, positive ions, or neutrons, this new Van de Graaff may be changed over from one radiation to another by using appropriate components which the manufacturer supplies. --High Voltage Engineering Corp., Cambridge 38, Mass.

MANUFACTURER'S NEWS:- New and larger quarters have been taken by R. S. Landauer, Jr., & Co., for the film badge and related health physics services offered by this firm. The new office and laboratory is at 24 Plaza, Park Forest, Ill.

Advanced Instruments, Inc., Boston, have been appointed exclusive sales representatives for the flame photometers manufactured by Baird Associates, Inc., Cambridge 38, Mass.; sales territory includes the U.S., with the exception of the West Coast. B. C. Wiggin, who heads Advanced Instruments, was at one time a sales engineer with Baird.

Among instruments which will be displayed at the American Institute of Physics meeting Jan. 30-Feb. 4, in New York, will be a wide selection of radiation research apparatus manufactured by Tracerlab, Inc., Boston, Mass.

A paper: "Principles of Radioactive Gauging Applied to Measurement and Control in Process Industries", will be delivered by D. C. Brunton, president, Isotope Products, Ltd., Oakville, Ontario, at the Conference on Instrumentation and Control in the Process Industries, January 25-26, in Chicago. The Conference is sponsored by Armour Research Foundation, Chicago, with sessions being held at Illinois Institute of Technology.

NOTES:- Two contract renewals for research on radiation instruments have been made by the USAEC to U. S. universities. At St. Procopius College, Francis Shonka will investigate special problems in nuclear instrumentation, while at the University of Notre Dame E. A. Coomes will do fundamental research on photoemission, under these contract renewals.

The regulation entitled "Operators Licenses", formulated by the USAEC, covering licensing of operators handling controls of nuclear reactors and other nuclear facilities in the civilian atomic energy industry, has been published in the Jan. 4th, 1956 issue of the Federal Register, and becomes effective 30 days after this publication. (The regulation applies only to controls which might, if improperly handled, result in the release of dangerous amounts of radioactive material.)

### IN THE FIELD OF EDUCATION...

NUCLEAR ENERGY INSTITUTE:- A Summer Nuclear Energy Institute will be conducted by Argonne National Laboratories this year, for the eight weeks beginning June 20. Purpose is to provide engineering college faculty members with education which will help them incorporate nuclear engineering material into their courses of instruction. Enrollment will be limited to sixty. Sponsorship is by American Society for Engineering Education; National Science Foundation; Northwestern University; and the USAEC. Application blanks from: Dean, Technological Institute, Northwestern University, Evanston, Ill. Submission deadline: Mar. 1, 1956.

FELLOWSHIP PROGRAM:- A new brochure describing the Oak Ridge graduate fellowship program which enables graduate students in the sciences to conduct their thesis research in the facilities of Oak Ridge laboratories, may be obtained from the Institute of Nuclear Studies, P.O. Box 117, Oak Ridge, Tenn. Doctoral candidates receive basic stipend of \$2,100 for 12 months, plus allowances for wife and children; fellowships may also be awarded to candidates for master's degrees.

RAW MATERIALS...prospecting, mining & marketing...

UNITED STATES:- Although competition from foreign monazite, richer in thorium than domestic ores, caused dredges at placer deposits near Cascade, Idaho, to shut down last August, a new dredge in Bear Valley, Idaho, is now nearing full production of euxenite and monazite concentrates. A new dredging operation near Aiken, S.C., has also begun producing substantial quantities of monazite.

CANADA:- In the blind River uranium area, Northern Ontario, Stancan Uranium Corp. has reported one of the best assays yet in this area. One drill hole showed, for a total thickness of 17-ft., an assay of 0.146% uranium oxide. Part of this intersection, 8.9-ft. thick, averaged 0.245% uranium oxide. Stancan is also considering exploration work for this coming Spring on a uranium prospect which it acquired in 1955 in the Greenwich lake area, approximately 30 miles northeast of Port Arthur, Northwestern Ontario. The company holds about 60 claims there..... In the Beaver-lodge area of Saskatchewan, Baska Uranium Mines has found favorable uranium showings at its Fredette Lake property there. One pitchblende occurrence assayed 0.88% uranium oxide across a 1-ft. width; the adjoining foot assayed 0.07%.

INTERNATIONAL ATOMIC ENERGY NEWS...

FRANCE:- The nuclear reactor at Marcoule, built and being operated by the French Atomic Energy Commission, in the Rhone Valley, and producing heat for generating energy and also plutonium, has now gone into operation. The plant, known as G-1, while primarily designed for plutonium production, will be capable of generating 5,000 KW of electricity, from the 40,000 KW of heat energy it will produce. By the middle of 1957, according to present plans, the other reactor at Marcoule should be in operation; this will produce 100,000 to 150,000 KW of heat energy, and a larger amount of electrical energy.

GREAT BRITAIN:- As the first British atomic power station (Calder-Hall "A"), approaches completion at Sellafield, on the Cumberland coast, considerable attention is focussing on this plant since it is the forerunner of at least eight based on the gas-cooled graphite-moderated type of nuclear reactor planned by the U.K. Atomic Energy Authority. At Sellafield, there is already in operation at Windscale Works the plutonium separation facility which treats the partly converted uranium from two air-cooled piles immediately beside it. Calder Hall "A" adjoins Windscale on the south, and another power station, Calder Hall "B", is in the very early stages of construction alongside it. Both these stations, together with two to be built at Chapelcross near Annan, Dumfries, will produce plutonium as well as electrical energy, so that this close proximity of Calder Hall to Windscale is very convenient.

ATOMIC ENERGY PATENT DIGEST...

Grants to Commercial Organizations: Radiation measuring instrument, which yields an indication varying as a logarithmic function of incident radiation. U. S. Pat. No. 2,728,862 issued Dec. 27th, 1955; assigned to Tracerlab, Inc., Boston, Mass. (Inventor: Pierre L. de Bourgnecht.)

Radiation meter. U. S. Pat. No. 2,728,863 issued Dec. 27th, 1955; assigned to Tracerlab, Inc. (Inventor: William F. Goodyear.)

Grants to Government Organizations: Method for the synthesis of an aldohexoside of a flavonol. U. S. Pat. No. 2,727,890 issued Dec. 20th, 1955; assigned to United States of America (USAEC). (Inventors: S.H. Wender and C.H. Ice.)

Leak detector for detecting the presence of a gas to which the equipment has been exposed. U. S. Pat. No. 2,727,995 issued Dec. 20th, 1955; assigned to United States of America (USAEC). (Inventors: R. Loevinger, T.A. Chubb, and G. W. Monk.)

Thermal neutron shield and method of manufacture. U. S. Pat. No. 2,727,996 issued Dec. 20th, 1955; assigned to United States of America (USAEC). (Inventors: T. Rockwell III and V. L. McKinney.)

Radiation pocket "screamer. An audible warning device. U. S. Pat. No. 2,728,861 issued Dec. 27th, 1955; assigned to United States of America (USAEC). (Inventor: F. M. Glass.)

Sincerely,

The Staff,  
ATOMIC ENERGY NEWSLETTER

January 10th, 1956.

